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## Deceptive Advertising Strategies in a Two-period Model

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**Abstract:** Deceptive advertising is the behavior that the operators make use of the advertisements to fabricate the facts and cause the consumers' misunderstanding of their goods or services so as to gain benefits. In this paper, the governments and consumers are taken into account. From the perspective of companies, the main target is to maximize the profits. In that case, we discuss the impact of government supervision, consumer negative word-of-mouth, product cost and other factors on company advertising decision-making. A two-period model is established to analyze the optimal propaganda and maximum profits of the four possible advertising strategies, e.g., the company doesn't make deceptive advertisements, makes deceptive advertisements in the first period, makes deceptive advertisements in the second period, and makes deceptive advertisements in both periods. In this paper, we investigate the two-period model and find which one strategy is more profitable for the company and the optimal advertising levels. We find that the company will make deceptive advertising when the difference in cost between high-quality and low-quality products is large, the government supervision is loose, and negative word-of-mouth effect is small. Based on different market environment and product characteristics, we derive some useful advertising advices for the company, and also give management insights to consumers and government regulatory authorities.

**Keywords:** deceptive advertising, optimal decision, decision-making model, two-period model

### 1. Motivations and Research Questions

Advertising is an important source of information for consumers to choose products, and it is also an important marketing tool for companies to expand the market and make profits. When promoting products, especially for some products that are not easy to be directly evaluated by consumers such as drugs and cosmetics, companies may launch deceptive advertising through false origins, exaggerated product functions in order to make more profits. With the rapid development of e-commerce, some online retailers choose to increase the sales volume by scalpers. In order to restrain the deceptive advertising, the new version of the Anti-Unfair Competition Law, which was enforced in January 2018 in China, has added the laws and regulations of online fictitious trading behaviors. In a word, deceptive advertising has become frequent in the market.

In this paper, we establish a two-period model to study the advertising strategy selection of a single company. We analyze the advertising decisions of a single company that monopolize the market. In order to investigate the negative impact of deceptive advertising, we analyze four cases by establishing a two-period model: (1) No deceptive advertising, HH (control group); (2) Only make deceptive advertisements in the later period, HL; (3) Only make deceptive advertisements in the early period, LH; (4) deceptive advertising, LL.

In each period, the company chooses whether to provide low-quality products and whether to make deceptive advertisements. Intuitively, companies that pay more attention to product quality and positive word of mouth will make provide high-quality products and make normal advertisements, while companies that focus on short-term benefits will more often choose deceptive advertisements. There are also many companies providing low-quality products in one period tentatively. The company's goal is to choose one of the four advertising strategies to maximize its own profits. Based on this, the main questions in this paper are that: (1) What factors will affect the advertising levels and profits of a company in our two-period model? When will a company

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provide low-quality products and make deceptive advertisements? (2) What is the optimal choice of a company in the four strategies? How does this choice change as the market environment changes? (3) How to refrain the deceptive advertising of companies and purify the market environment?

## 2. The Theoretical Contributions

The researches on deceptive advertising mainly analyze it from the legal perspective, and lack of further exploration on the timing and strength of advertising<sup>[1-4]</sup>. In this paper, a two-period model is established to analyze the maximum profits of the four possible advertising strategies. We analyze whether the companies should make deceptive advertisements, and we make a research on the timing and level of advertisements. Based on the market environment and product characteristics, we put forward advertising advices to companies, and also give opinions to consumers and government regulatory authorities.

## 3. Results

**Corollary 1.** No matter the company provides high-quality or low-quality products, its advertising level in the second period will not be influenced by the first-period decisions. **Corollary 2.** When the company provides high-quality products in the first period, the first-period advertising level will not be influenced by the price of the second-period products. **Corollary 3.** When the company provides low-quality products in the first period, the first-period advertising level will be influenced by the price of the second-period products. **Corollary 4.** The company will provide low-quality products and make deceptive advertisements when: (1)The difference in unit cost between high-quality products and low-quality products is large; (2)The government supervision is loose; (3)Negative word of mouth effect is sufficient small. **Corollary 5.** If the price cannot be changed in the two periods, the company will not choose the third advertising strategy (LH), because  $R_{HL}^* > R_{LH}^*$ .

We find that the advertising level in the second period is not affected by the first period, which is consistent with the concept of sunk cost in economics, but the advertising level in the first period is limited by the cost of the product in the second period. In many situations, there is a certain cost difference between high-quality products and low-quality products, and government supervision is not strict enough. Therefore, the company may maximize its profit by introducing deceptive advertising in a certain period. We find that making deceptive advertisements at the later stage is always better than the early stage when the prices cannot be changed. Only when the difference between high-quality and low-quality product costs is narrow, and the government supervision is stringent enough, the company tends to make no deceptive advertisements.

Companies should consider the current profits as well as the impact of word of mouth on the long-term profits, so they may choose to make deceptive advertisements at the later stage of product life cycle. For government, if the supervision is strict enough, the company may choose to make no deceptive advertisements. However, for products with a large difference in costs, the government needs to pay a huge cost of supervision. Only for the products with little difference in costs, government supervision can play a significant role.

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